

CLAIMS

1. Furniture system (1) which is composed of at least first and second rectangular panel-shaped elements (2, 3, 12, 13), with a first and a second panel-shaped element (2, 3, 12, 13) in each case positioned at an angle with respect to one another and each panel-shaped element (2, 3, 12, 13) comprising two bearing surfaces and end sides which connect the bearing surfaces, the panel-shaped elements being assembled to form a furniture system using connecting elements, characterized in that the connecting elements are tie rods (15, 16), at least part of which runs parallel to the panel-shaped elements (2, 3, 12, 13), the tie rods (15, 16) connecting the panel-shaped elements (2, 3, 12, 13) under tension.
2. Furniture system (1) according to claim 1, characterized in that in an indirect connection a panel-shaped element (2, 3, 12, 13, 22, 23) in each case bears by means of one end side against a coupling part (14, 24) with a quadrilateral cross section, and the tie rods (15, 16) ensure that the end side in question and the coupling part (14, 24) bear against one another, the coupling part (14, 24) having protuberances (24a) at the corners, which bear against the two bearing surfaces of the corresponding panel-shaped element (22, 23).
3. Furniture system (1) according to claim 2, characterized in that the coupling part (14, 24) and the end side of the panel-shaped element (12, 13, 22, 23) which bears against it are of the same length and the tie rods (15, 16) run inside cavities (6a, 6b, 7a, 7b) which are left clear inside the corresponding panel-shaped element.
4. Furniture system (1) according to claim 2, characterized in that the coupling part (34) is of a greater length than the end side of the panel-shaped element (32) which bears against it, and the tie rods (35) run outside the corresponding panel-shaped element (32).

5. Furniture system (1) according to one or more of the preceding claims 2-4, characterized in that at least two tie rods interact with each of the first and second panel-shaped elements (12, 13), in that the coupling part (14) is square in cross section, and in that the coupling part (14) includes openings into which a coupling nut (47) fits, inside which coupling nut there is a hole (48) with an internal screw thread, and a tie rod which is present in the furniture system (1) is composed of a plurality of partial tie rods (15', 16') having, at least at both ends, an external screw thread (15a), these partial tie rods being connected to one another by coupling nuts (47) and each partial tie rod (15', 16') being of a length of at most the dimension of the panel-shaped element (12, 13) to which it is parallel plus the length of the side of the coupling part (14), and a cap nut which bears against an end coupling part (14) on the outside of the furniture system (1) being present at both ends of the tie rod thus constructed, and the coupling part (14) being suitable for coupling partial tie rods (15' 16') running in at least two mutually perpendicular directions of the furniture system with the aid of coupling nuts.

6. Furniture system (1) according to one or more of claims 2-4, characterized in that at least two tie rods (15, 16) interact with each of the first and second panel-shaped elements (12, 13), in that the coupling part (14) is square in cross section and the coupling part (14) includes openings into which a spacer sleeve (57) fits, in which spacer sleeve there is a hole (58) with an internal diameter which allows the external diameter of a tie rod (15, 16) which forms part of the furniture system to pass through it in a tightly fitting manner, and at both ends of the tie rod (15, 16) there is a screw thread on which there is an cap nut which bears against an end coupling part (14) on the outside of the furniture system (1), and the coupling part (14) is suitable for tie rods (15, 16) running in at least two mutually perpendicular directions of the furniture system (1) to pass through via spacer sleeves.

7. Furniture system according to one or more of claims 2-4,

characterized in that at least two tie rods interact with each of the first and second panel-shaped elements (12, 13), in that the coupling part (14) is square in cross section and the coupling part (14) includes openings (17', 18'), into which a
5 rotationally symmetrical coupling nut (17, 18) fits, in which coupling nut there is a hole with an internal screw thread, and a tie rod (15, 16) which forms part of the furniture system is composed of a plurality of partial tie rods (15', 16') having, at least at both ends, an external screw thread (15a), the said
10 partial tie rods being connected to one another by coupling nuts (17, 18), each partial tie rod (15', 16') being of a length of at most the dimension of the panel-shaped element (12, 13) to which it is parallel plus the length of the side of the coupling part (14), a coupling nut (17, 18) having, over its length, two
15 regions with different external cross-sectional surfaces, the openings in the coupling part (14) being formed so as to be complementary with the coupling nut (17, 18), and the coupling nut (17, 18) being provided with means for rotating it with respect to a partial tie rod (15', 16'), while the coupling part
20 (14) is suitable for coupling partial tie rods (15', 16') running in a least two mutually perpendicular directions of the furniture system (1) with the aid of coupling nuts.

8. Furniture system (1) according to claim 7, characterized in
25 that the means for rotating a coupling nut (17) consists of a hexagon socket part (19) in the hole, which replaces the internal screw thread over part of its length.

9. Furniture system (1) according to claim 7-8, characterized
30 in that by tightening the coupling nut (17) each of the partial tie rods (15', 16') is brought under tensile stress, in such a manner that the sum of the tensile stresses of all the partial tie rods (15', 16') corresponds to the tensile stress which is desired for the tie rod in question.

35 10. Furniture system (1) according to claim 1, characterized in that it comprises a desired number of first panel-shaped elements (62) and at least two second panel-shaped elements

(63), and in that in a direct connection a first panel-shaped element (62) in each case bears by means of an end side against a bearing surface of a second panel-shaped element (63), a first panel-shaped element (62) and a second panel-shaped element (63) are perpendicular to one another, there are at least two tie rods (65) per first panel-shaped element (62), the tie rods (65) are longer than the distance between those bearing surfaces of the second panel-shaped elements (63) or the outermost second panel-shaped elements (63) which face away from the furniture system (1), and the tie rods (65) lead through openings in the second panel-shaped elements (63) and project outside the latter, the ends of the tie rods (65) are provided with a screw thread, and a cap nut is present at both ends of a tie rod (65), bearing against the corresponding bearing surface of a second panel-shaped element (63), so that a desired tensile stress can be applied to each tie rod (65) by tightening the cap nut or cap nuts.

11. Panel-shaped element (70) for use in a furniture system according to one or more of claims 1-10, comprising two bearing surfaces and end sides which connect the bearing surfaces, characterized in that the panel-shaped element (70) comprises at least two elongate, parallel cavities (76a, 76b) which are arranged between the bearing surfaces and each allow a tie rod (71) to pass through, each cavity (76a, 76b) running parallel to an end side.

12. Panel-shaped element (70) according to claim 11, characterized in that the panel-shaped element (70) comprises at least one opening, the axis of which is perpendicular to the bearing surfaces and which intersects the axis of the cavity (76a, 76b) for a tie rod (71) to pass through, which opening is suitable for receiving a securing sleeve (72) which, within its length, comprises an opening (73) for a positioned tie rod (71) to pass through, the securing sleeve (72) comprising, at at least one end, a threaded opening for securing a desired component, such as handles and locks, hinges, rails or the like, to a bearing surface of the panel-shaped element (70).

13. Panel-shaped element according to claim 12, characterized in that the panel-shaped element comprises four cavities (76a, 76b, 77a, 77b) which are located in pairs in the vicinity of two parallel end sides, and over the length of each cavity (76a, 76b, 77a, 77b) there are a plurality of openings (73) for receiving each a securing sleeve (72).
14. Panel-shaped element according to claim 12-13, characterized in that the openings (73) are selected from openings (73) which extend over the entire distance between the bearing surfaces and openings (73) which extend over a distance which is less than the distance between the bearing surfaces.
15. Panel-shaped element (70) according to one or more of claims 11-14, characterized in that the panel-shaped element (70) is produced by injection-moulding or extrusion of thermoplastic, and the cavities (76a, 76b, 77a, 77b) are surrounded by ribs which run between the bearing surfaces of a panel-shaped element (70), and furthermore additional ribs (75) are present.
16. Securing sleeve (73) for use with a panel-shaped element (70) according to one or more of claims 12 - 15, characterized in that the securing sleeve (73) is in the shape of an elongate cylinder with a hole (74a, 74b) at at least one end and a screw thread incorporated in this hole, and an opening (73), the axis of which is perpendicular to the axis of the securing sleeve (73) and which is suitable for a tie rod (71) to pass through.